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CURRENT LITERATURE

BOOK REVIEWS

The question of sex

The determination and inheritance of sex have presented problems of peculiar interest and also of peculiar difficulty. CORRENS¹ has grappled with them from a new point of view and has gained some surprising results. His point of attack is through the hybridization of plants having different sex characteristics, as for example the crossing of a dioecious species with a hermaphrodite or monoecious species. His most important conclusions are that each germ cell of the forms he has used carries a progamic sex tendency, but that the actual determination of sex is syngamic, that is, it results from the chance that brings together two germ cells having particular sex tendencies. In *Bryonia dioica* he shows that the female germ cells carry always the same sex tendency, namely to produce females; while the male germ cells are of two kinds, half bearing the female tendency and half the male. The male tendency dominates over the female, so that when the eggs are fertilized by these two kinds of sperms, those which receive sperms bearing the female tendency produce females, and those which are fertilized by sperms bearing the male tendency produce males. The females are homozygous ($\varphi + \varphi$) with respect to sex and the males are heterozygous ($\varphi + \delta$). Evidence is presented that the same condition exists in *Melandrium album*, as shown by crossing with *Silene viscosa*, and he considers it very probable that all dioecious plants are similarly constituted. The author is properly cautious in discussing the applicability of these results to other classes of organisms than those with which he has dealt, and especially to animals, but he discusses WILSON's noteworthy studies upon the idiochromosomes of the Hemiptera,² and points out how readily these can be interpreted on the basis of a sex relation similar to that discovered in higher plants.

An epigamic modification of sex through the influence of nutrition or other external conditions is not deemed to be wholly excluded, owing to the fact that one sex may carry the other in a recessive or latent condition, and it is at least conceivable that such latency may be to some extent modifiable by external factors.

In respect to the sex of hermaphrodite and monoecious plants, it is noted that in all cases of "mosaic" inheritance which have been sufficiently investigated

¹ CORRENS, C., Die Bestimmung und Vererbung des Geschlechtes nach neuen Versuchen mit höheren Pflanzen. pp. 81. *figs.* 9. 1907. Berlin: Gebrüder Borntraeger.

² WILSON, E. B., Studies on chromosomes. III. The sexual differences of the chromosome groups in Hemiptera, with some considerations on the determination and inheritance of sex. *Jour. Exp. Zool.* 3:1. 1906.

there is a distinct factor present for the mosaic condition, so that the sex of such plants is not to be looked upon as due to the presence of the male- and female-producing units alone, but to the presence of a factor determining the tendency to be hermaphrodite or monoecious respectively.

The field for investigation which has thus been thrown open is a very inviting one, and it is to be hoped that other dioecious species which have nearly related hermaphrodite or monoecious species among both plants and animals will be made to yield whatever support they may for the generalizations CORRENS has made.—GEORGE H. SHULL.

Plankton of Illinois River

Four years ago, this journal reviewed the first part (1903) of KOFOID's *Plankton of the Illinois River*,³ which dealt with the quantitative investigations and general results. There has just appeared the second part, which deals with the organisms of the plankton and their seasonal distribution.⁴ The character of the work, with its mass of statistics, forbids an adequate review. As was stated in the preceding review, this series forms the most important contribution yet made to the subject of river plankton, and the work has been carried on with the most painstaking care. In the discussion of species, plants occupy 45 pages, and animals 230. The plant groups considered are Bacteriaceae, Schizophyceae, Chlorophyceae, Bacillariaceae, Conjugatae, and certain seed plants. Some general conclusions in reference to the seasonal changes are stated, conclusions that are promised detailed discussion in a later paper. For example, each month is characterized by certain plankton features, dependent upon a certain range of hydrographic, thermal, and chemical conditions, and of illumination. There is a certain range of component species, and a range of numbers of individuals, the proportions varying from month to month, and constituting one of the main elements in the seasonal changes of the plankton. Transitions from month to month are most profound at seasons of greatest environmental changes, as at the times of vernal increase and autumnal decline in temperatures. In general two types of plankton were found, the summer and the winter, the vernal and autumnal types being only transitions between the two when organisms from both are present. The winter plankton is characterized by a small number of species peculiar to that season, and a number of perennial forms; the summer by a larger number of summer organisms with the perennial forms.

In reference to the question whether the plankton of streams differs from that of lakes and ponds, the author states that it may be distinguished from them in being a mixed plankton (due to the mingling of planktons from all sources in the

³ BOT. GAZETTE 37:472. 1904.

⁴ KOFOID, C. A., The plankton of the Illinois River, 1894-1899, with introductory notes upon the hydrography of the Illinois River and its basin. Part II. Constituent organisms and their seasonal distribution. Bull. Ill. State Lab. Nat. Hist. 8:Article I. pp. vii + 360. 1908.